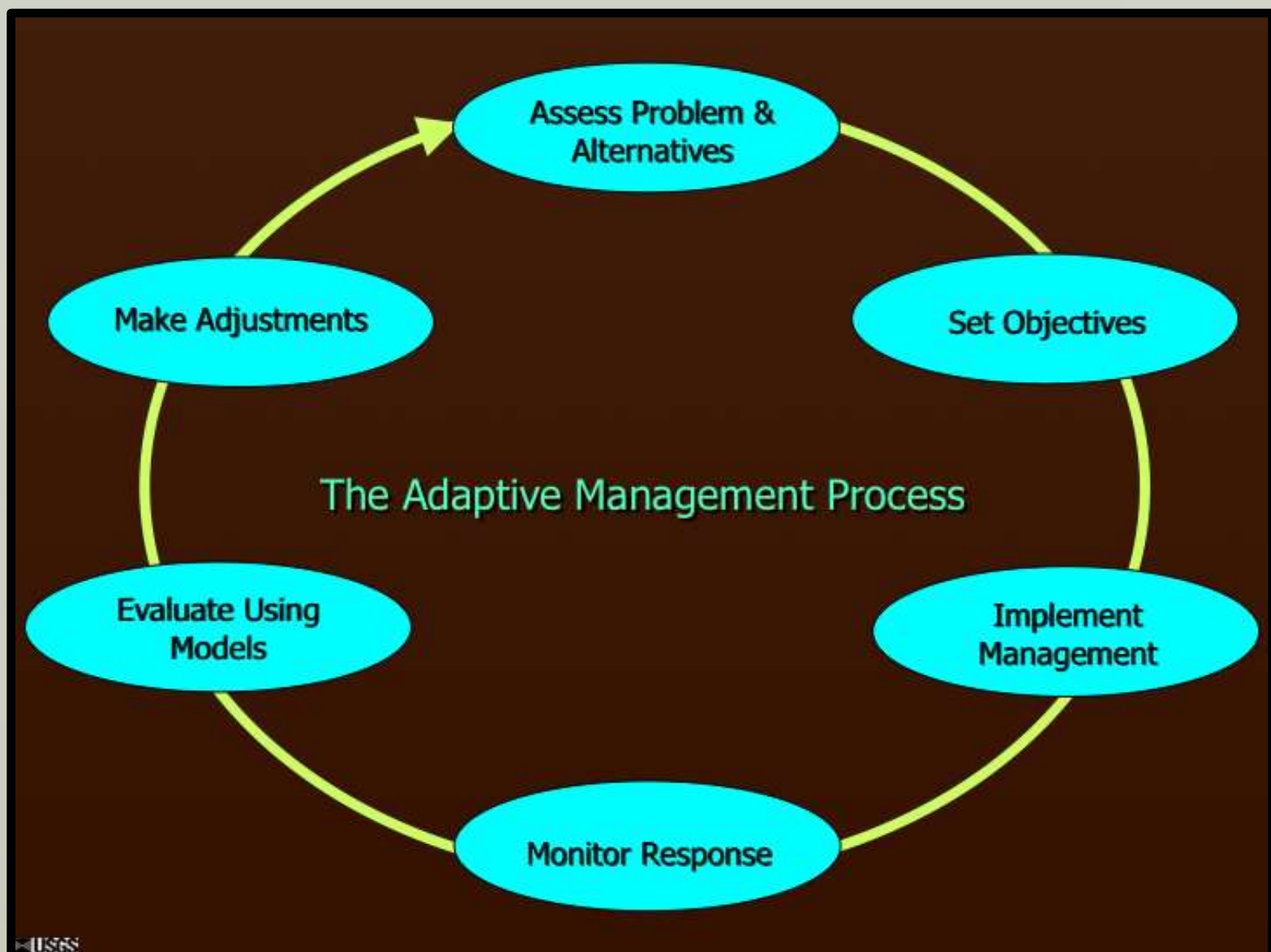
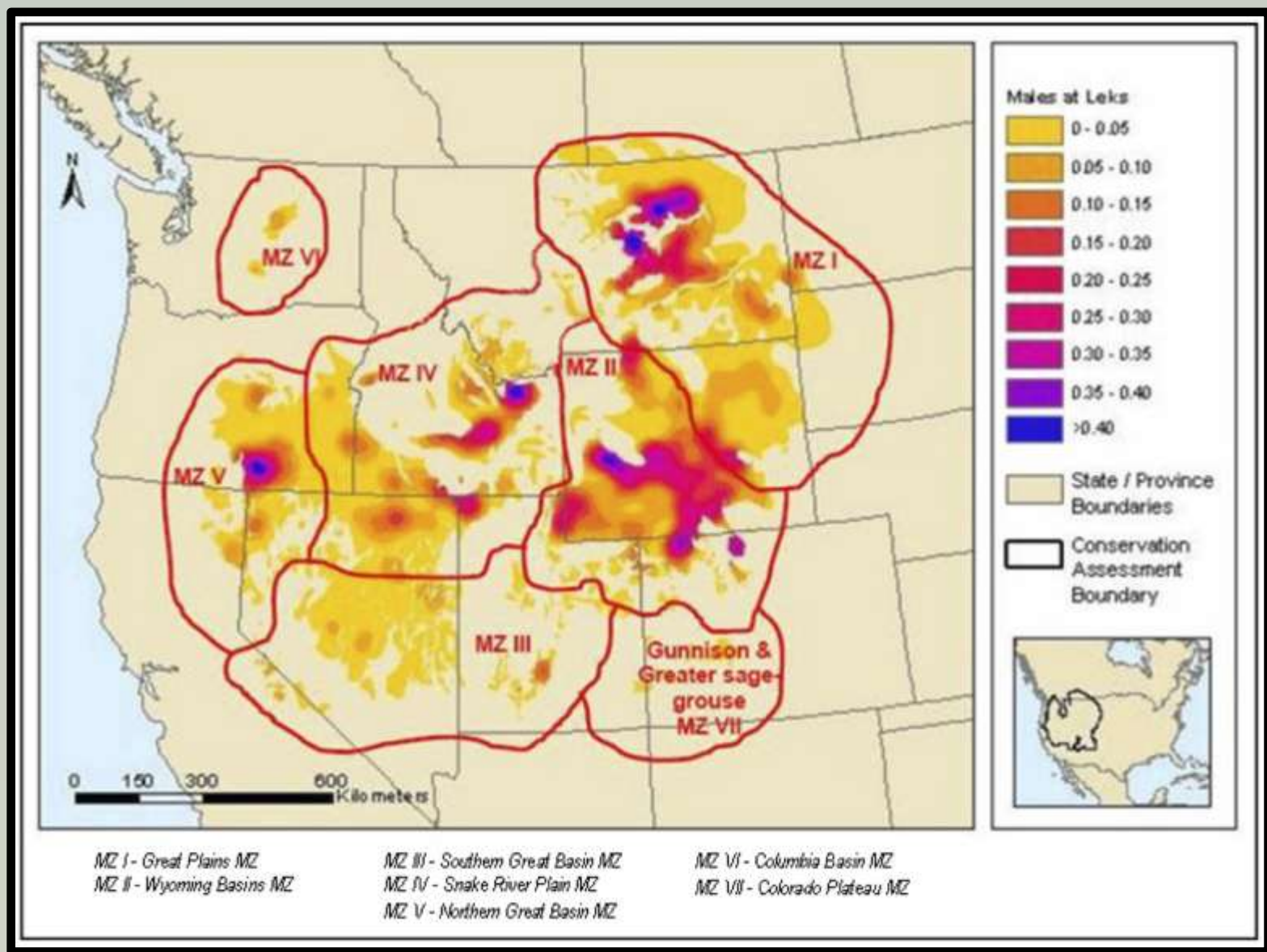


EXPLORING ADAPTIVE MANAGEMENT FOR GREATER SAGE-GROUSE IN NORTHERN MONTANA IN THE FACE OF CLIMATE CHANGE

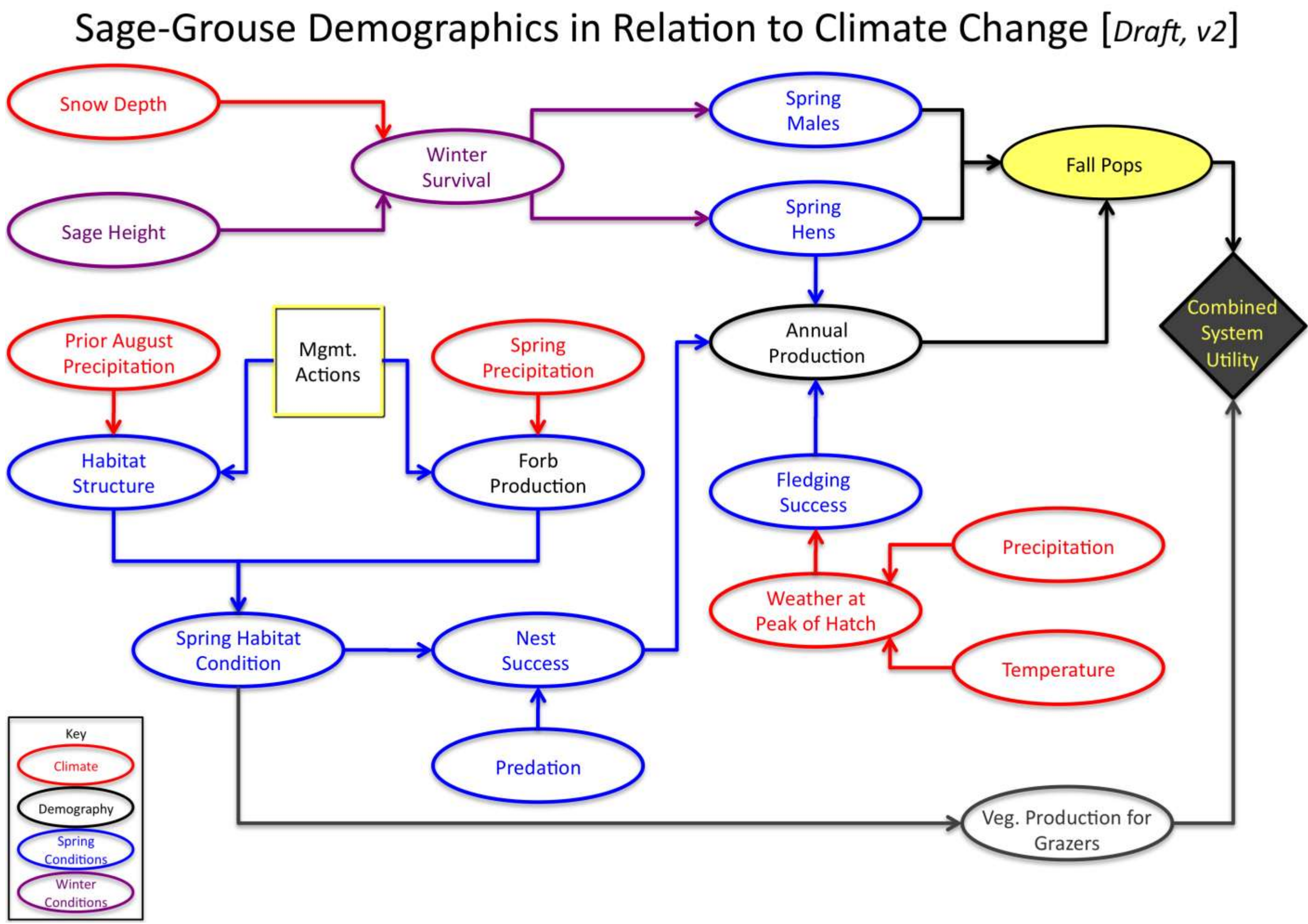
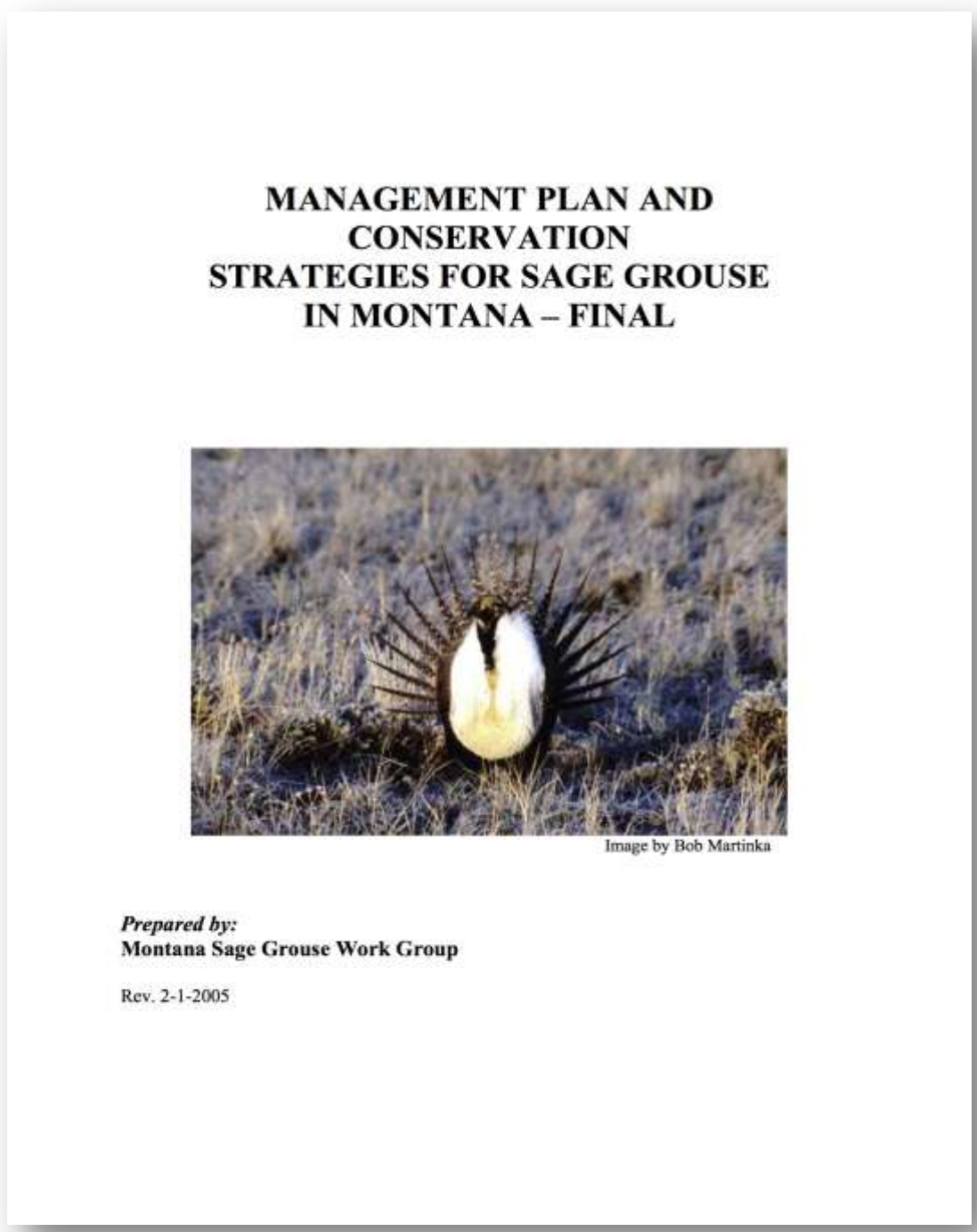
The Sage-Grouse community has divided the range into management zones (right, top.) The portion in Northern Montana (part of MZ I), currently has some of the highest densities of grouse. Because of the prevalence of Department of Interior lands in this ~5,000,000 acre (20,234+ hectares) landscape and corresponding requests from those managers, we are attempting to lead a collaboration of managers and scientists to explore the use of *adaptive management* (right, bottom) in a landscape conservation perspective.



We began by conducting personal interviews with field biologists and managers to assess what management actions they are making. Using this information, we designed and conducted an on-line survey to further delineate those actions and how they are being made. Finally, almost 40 managers and scientists met to discuss whether an adaptive management approach might be useful to gain an understanding of the interaction among habitats and management actions and how this will be affected by *annual weather and climate patterns*.



Based on the existing plan for grouse in Montana (right), we drafted a *conceptual model* of how *weather and climate patterns affect the life cycle of grouse* (below), and we continue to gather comments on it. The intent is to translate such conceptual models into ecological response models for assessing the potential vulnerability of Sage-Grouse to future climatic changes.



Proposed work:

1. Social and decision science to identify social, institutional, and economic components that influence decisional processes and outcomes (narrative and social network analyses of manager and stakeholder interviews) and how these dynamics interact with the biophysical dynamics in this Social Ecological System.
2. Climate informed ecological response modelling to identify and evaluate scenarios of Sage-Grouse demographics and habitat change (computational decision analysis, habitat response models, existing climate data).
3. Meta-analysis of this engagement process and framework to document and evaluate best practices as applied to grouse management range-wide because the process is, itself, an experiment.
4. Working one-on-one with managers to evaluate model and adaptive management applicability using such tools as LCMAP (Landscape Conservation Management and Analysis Portal).